Work Task E9: Hart Mine Marsh

FY15 Estimate	FY15 Actual Obligations	Cumulative Expenditures Through FY15	FY16 Approved Estimate	FY17 Proposed Estimate	FY18 Proposed Estimate	FY19 Proposed Estimate
$250,000	$204,369.70	$6,822,956.73	$250,000	$250,000	$250,000	$200,000

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Start Date: FY05

Expected Duration: FY55

Long-Term Goal: Habitat creation

Conservation Measures: CLRA1, LEBI1, BLRA1, and CRCR2

Location: Reach 4, Cibola National Wildlife Refuge, River Mile 92, Arizona

Purpose: To create and manage marsh habitat for Yuma clapper rails, western least bitterns, California black rails, and Colorado River cotton rats

Connections with Other Work Tasks (Past and Future): Vegetation and species monitoring are being addressed under Work Tasks F1–F4 and F7.

Project Description: Hart Mine Marsh was a decadent marsh located on the Cibola National Wildlife Refuge that was restored and expanded to create functional habitat for covered species. This was accomplished by the installation of control structures to manage water levels, providing sources of higher-quality surface water flows, making physical changes to the site's topography, and by planting and supporting native wetland and marsh vegetation. The approach was to remove a substantial amount of existing salt cedar from the site, deepen areas of existing open water, contour areas adjacent to those deeper areas, and manage water at the higher elevations to promote and sustain marsh cover type vegetation and wetland functions. The creation of habitat included both the establishment of native plants and management of water levels to meet performance standards for integrating emergent vegetation and open water at varying depths into a mosaic of marsh habitats.

Annual Maintenance and Management: The primary source of water for Hart Mine Marsh is drainage water from fields in Farm Unit #1 on the Cibola National Wildlife Refuge, which is delivered through Arnett Ditch into the marsh. However, raw Colorado River water can also be pumped and delivered either into the Arnett Ditch or directly into the marsh. The increased management

flexibility of the two sources of water, along with a series of water control structures, allow for stable water level management as well as the ability to manage salinity. Water deliveries are used to maintain static water levels during marsh bird nesting season and for flushing of the marsh in winter to manage salinity.

Vegetation maintenance at the marsh employs an integrated pest management approach that use both manual (hand pulling) and chemical (herbicide) treatment of invasive species, including salt cedar, phragmites, and five-hook bassia.

The annual costs associated with operating the marsh include operation and maintenance of the water control structures, maintenance of the pumping system and electrical costs, invasive and non-native vegetation control, and road maintenance.

Previous Activities: In FY09, the first phase of construction was completed and resulted in 92 acres of marsh. In FY10, Phase 2 of construction was completed and resulted in the creation of an additional 163 acres of marsh, for a total of 255 acres.

The marsh has been managed for LCR MSCP covered species since 2009. Yuma clapper rails, California black rails, and western least bitterns have been detected on the conservation area.

FY15 Accomplishments:

Maintenance/Restoration/Management: The majority of the activities that occurred in FY15 were for management, maintenance, and monitoring of the established marsh. Monitoring of abiotic and biotic parameters was also conducted. The U.S. Fish and Wildlife Service (USFWS), using non LCR MSCP funding, performed a salinity soil sampling study in the spring of 2015. The findings of this study concluded that current marsh management maintains salinity levels below established thresholds for marsh vegetation.

Pump Stand Replacement: The USFWS and the Bureau of Reclamation have entered into an agreement to replace aging pump stands at both Hart Mine Marsh and the Cibola National Wildlife Refuge Unit #1 Conservation Area. The USFWS has contributed $712,000, as their share, for the replacement of the pump stands and pumps at both areas. The funds to design and implement the replacement are being leveraged under the LCR MSCP. Progress will be tracked under this work task and Work Task E24; however, expenditures will not be shown for the work funded by the USFWS.

Initial planning and design started in FY15 for these upgrades, which will include abandoning the existing pump stand and constructing a new one. The pump stand replacement was targeted as a priority since it has exceeded its normal operational lifespan.

Monitoring: Monitoring was conducted at Hart Mine Marsh for vegetation, marsh birds, and MacNeill's sootywings.

Vegetation data were collected in FY15 using light detection and ranging (LiDAR) remote sensing techniques.

Marsh bird surveys were conducted on three occasions at the wetland portions of the site. Western least bitterns and Yuma clapper rails were detected and are presumed to be breeding at the site. California black rails were not detected.

Surveys were conducted for MacNeill's sootywings in 2015 on the northeastern corner of Hart Mine Marsh. Individuals were detected in April and May.

FY16 Activities:

Maintenance/Restoration/Management: Management and monitoring of the marsh will continue.

Minor construction activities planned for FY16 include upgrades to the water control infrastructure. Frequently used canal gates will be retrofitted (new headrails and stems will be installed) so that they can be exercised (raised and lowered) with a gas-powered or electric actuator. Currently, the gates can only be exercised by manually turning a handwheel, which requires large inputs of manual labor. The retrofit and upgrade will allow for more efficient use of labor resources and will also allow the gates to be exercised on a more frequent basis. Frequent exercising of the gates will ensure that that they do not seize and will prevent the subsequent damage that typically occurs when attempting to unseize an immobilized gate.

Arnett Ditch conveys water from both the Colorado River and the agricultural fields north of Hart Mine Marsh, to the marsh, and eventually drains back into the Colorado River. Cattails have overgrown the drain, and approximately 1 mile of the drain is scheduled to be cleared.

Pump Stand Replacement: The preliminary design, including addressing sediment intake at this site, will be initiated. However, the pump stand at the Cibola National Wildlife Refuge Unit #1 Conservation Area will be replaced first, and therefore, activities for replacement of the Hart Mine Marsh pump stand will be minimal.

Monitoring: Marsh bird surveys will be conducted March, April, and May.

Vegetation data will be collected in May 2016 using LiDAR remote sensing techniques.

Proposed FY17 Activities:

Maintenance/Restoration/Management: Management and monitoring of the marsh will continue. No construction, restoration, or changes to the marsh management area anticipated.

Pump Stand Replacement: The pump stand is in a shallow section of the river; sediment transport and entrainment modeling is anticipated to refine the design.

Monitoring: Marsh bird surveys will be conducted in March, April, and May.

Information from the LiDAR vegetation data collected during FY15 and/or FY16 will be used to determine the schedule for vegetation monitoring data collection for FY17 and beyond.

Pertinent Reports: The *2015 Hart Mine Marsh Conservation Area Annual Report* will be posted on the LCR MSCP Web site once integration of the data collected throughout the calendar year is complete.